at 5,000 meters elevation; and (5) that, at this level, the temperature and pressure are equal to their mean annual values, namely 260°A., and 406 mm.

It was found that the values of K do vary with N substantially as found in the laboratory. This permits of quantitative and qualitative work on the question in the wind tunnel and laboratory.—*C. L. M.*

551.508.5 (048)

ON THE COMPARABILITY OF ANEMOMETERS.

By C. E. BRAZIER.

[Abstracted and excerpted from *Comptes Rendus*, Paris Acad., Apr. 4, 1921, p. 843.]

Considerable differences in measured wind speed are observed if two anemometers of different types are exposed in a natural wind, and observations made repeatedly. The clue to the discrepancy lies in number of turns made by the two instruments in the same lapse of time. Inclined currents of air were used, and a comparison of the recorded horizontal component with the actual horizontal component was made. Comparing many types of anemometers in this manner, the following conclusions were drawn:[1]

1. The various types of anemometers, when perfectly calibrated in the laboratory, do not furnish indications comparable among themselves, when exposed in the complex movement of the natural wind, unless the inclination of the wind to the anemometer axis is less than 10°.

2. In an installation where there are frequent eddies due to pronounced vertical components of air movement:

(*a*) The indications of anemometers of the Richard type are too low, while those from the other instruments are too high.

(*b*) The excess of the values obtained with the Robinson anemometers is all the more accentuated when the difference between the diameters of the cups and the distance from center to center of opposite cups is least.

(*c*) The instruments whose indications approach most nearly the true velocities are the Richard type of anemometers and the Robinson with short arms (ratio of diameter of cups to that of cup-center distance 5 to 8).

(*d*) Until the inclinations are of the order of ±50°, measurements of the horizontal component by anemometers B and H agree to within nearly 5 per cent, as shown by the averages of the figures furnished.

(*e*) If the installation permits of the use of only a single instrument it is of advantage to employ a Richard anemometer or in its absence a Robinson anemometer of type H.

(*f*) Conclusions based upon comparisons in the natural wind, of anemometers, one of which has been tested in the laboratory, can be depended upon only when the conditions are the same as those under which the comparisons are made.

551.509 (048)

ON LONG-RANGE FORECASTING.[2]

By JEAN MASCART.

[Abstracted from *Comptes Rendus*, Aug. 22, 1921, pp. 419-420.]

Scientific attempts at long-range forecasting have been somewhat discredited by the necessary exposing of the unscientific methods of the almanac makers. But certain worth-while results have been achieved upon the basis of the assumption that similar weather will be followed by similar weather.

Upon such considerations, the author has made forecasts based upon weather of past years similar to the current weather (the details of the study are not presented), and has issued on the 20th of the month a forecast of the characteristics of the following month. In ordinary day-to-day forecasting his percentage of accuracy is 78.3, and in long-range forecasting, covering a period 10 to 41 days in advance, his percentage is 65.7.

That this is not due to chance is indicated by the fact that some months appear to be consistently better for this type of forecasting. The percentage is 76 in September, as opposed to 59.7 in March. The results are regarded as sufficiently good to warrant further systematic study. —*C. L. M.*

DISCUSSION.

It is to be hoped that M. Mascart, at some future time, will present the details of his method, which we infer to be one based upon ideas prevalent some 20 years ago, to the effect that like follows like in weather sequences.

This thought was frequently discussed by the forecasters of the Weather Bureau at the time and a number of suggestions looking to its practical application in the day-to-day forecasts were put forth.[3]

As may be readily inferred, the plan was to classify the daily weather maps in easily recognizable types and to refer each daily weather map as it was completed to its prototype. The attempt to classify the maps brought out the fact, already suspected, that many maps would defy classification and that still others, while they might resemble the general type in the larger features, yet on closer examination would be found to differ in some essential feature which would place it outside of the original classification.

On the whole the plan was not successful, although it possessed some decided advantages for purely local forecasting.

From the attempt to forecast day-to-day changes it is not a very long step to monthly and seasonal forecasting, and that, in part at least, is what M. Mascart has done.

The present writer has given some attention in a preliminary way to the sequence of weather from month to month. His experience in the study for the continental interior and the northeastern part of the United States leads to the belief that forecasts of a single element, say temperature or precipitation, for a month in advance would not be accurate in 50 per cent of the cases. Some modification of this statement could be made depending upon the closeness of approach to actual conditions that might be attempted. The value of any forecast is directly proportional to its accuracy and definiteness. It is of little moment to forecast that a coming month or season will be warmer or colder than the average. The forecast to be useful should specify how much or how little the departure will be, and in the case of a month whether the departure from the average will occur in the beginning, the middle, or the end of the month.—*A. J. Henry.*

[1] Excerpted from a translation by R. N. Covert.

[2] *Sur la prévision du temps à long terme.*

[3] See Brandenburg, F. H.; Brown, W. C.; Garriott, E. B. MO. WEATHER REV. 29 548-8. Also Richardson, H. W. *ibid* 31:68.